SURGERY.

UNDER THE CHARGE OF

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The Treatment of Wounds, and the Choice of Material for Drains and Ligatures.

At the seventh reunion of the Italian Surgical Society the subject of wound treatment and the choice of material for drains and ligatures was discussed by a number of the members.

Bassini stated that the employment of sponges was unadvisable, not only on account of the expense, but particularly because of the difficulty of accomplishing thorough sterilization. Wads or compresses of moist cotton should also be rejected, since small threads or filaments are frequently left in the wound, and the same difficulty in accomplishing sterilization obtains as is the case in regard to sponges. He recommends balls of salicylated cotton packed in sterilized gauze, and purified by means of dry heat. In relation to the substances employed for ligature and suture, although catgut is to be preferred from the fact that it is homogeneous with the tissues of the living organism, unfortunately it cannot be sufficiently disinfected, since it will not withstand the action of heat. Silk, however, is very readily sterilized, and in general should be preferred to catgut.

Drainage is indicated only in those cases where it is impossible to close pouches and diverticulæ by the approximation of their surfaces, accomplished by the buried suture, or where infection is imminent.

As to the choice of disinfecting substances it is impossible to speak authoritatively, since no medium has yet been found which is satisfactorily efficacious against each particular form of infection.

Gauze sterilized by dry heat and salicylated cotton to be applied immediately to the wound, with thick layers of non-medicated cotton placed over this, represent the best means of protecting wounds from post-operative infection.

Novarro, while conceding that sponges should not be employed, objected to the use of silk in buried sutures, and in case of resection of the viscera. Here catgut is preferable. If previously sterilized in a solution of sublimate, 1 : 100, it will not give rise to infection. When there is imperfect hæmostasis, or the formation of cavities cannot be avoided, tamponade with iodoform gauze, followed by secondary suture of the wound, will give the best results.

Ceccherelli stated that the double cyanide of zinc and mercury used as a disinfectant has given good results. This substance is perfectly aseptic, and exercises neither a toxic nor an irritant action upon the tissues. Its antiseptic value has not yet been determined.

CORRADI also objects to the use of sponges. He substitutes them by gauze sterilized by dry heat. Where drainage is necessary, he prefers glass tubes, since these are readily purified. He has always attached more importance to the size of the suture or ligature than to its composition, since the smaller the thread the more readily is it rendered aseptic. For this reason he prefers silk, which he soaks for upward of a year in an alcoholic sublimate solution, 1 : 1000. This solution is renewed every two or three months. Alcohol is employed in place of water because the latter diminishes the strength and consistency of the thread. When it is necessary to use coarse silk this should be subjected to the action of moist heat for thorough sterilization of the central portions, afterward it may be preserved in the alcoholic and sublimate solution. Though dressings need not necessarily be antiseptic, they must be absolutely sterile; this Corradi accomplishes by subjecting them to a temperature of 338° F. for two hours. A quantity of gauze sufficient for the dressing is placed in a metallic box, this is hermetically sealed, is left in the oven for the required time, and is not removed from its box until the surgeon is prepared to apply it directly to the wound.

LAVAGE OF THE PERITONEAL CAVITY.

DELBET (*Annales de Gynécologie*, September, 1889) concludes, as the result of elaborate experimentation upon lavage of the peritoneum, that the liquid used for irrigation should penetrate to all parts of the peritoneal cavity. If it is desired to wash out Douglas's cul-de-sac the trunk of the patient can be elevated, and the intestinal coils which have not been involved in operation or smeared with blood or discharges can be protected by sponges. It is difficult, if not impossible, to free the peritoneum completely from the foreign substances which have entered its cavity by means of lavage. In case of escape of septic liquids into the peritoneal cavity, the operator should at first employ an aseptic irrigation, and this should be followed by one with antiseptic properties. After these irrigations there always remains a considerable quantity of liquid in the iliac and lumbar fossa.

The temperature of the liquid used may vary between 64.5° and 122° F. without producing any marked effect upon either respiration or circulation. The temperature should always be that of the cavity itself, though very hot irrigations have been employed for their hæmostatic action. That such effect is produced by them is extremely doubtful. During the first minutes of intra-abdominal irrigation there is a very considerable quantity of the liquid absorbed; when a normal saline solution is used this practically amounts to a veritable transfusion. The peritoneal cavity may be washed by toxic substances without danger of general poisoning, provided the toxic irrigation is preceded for ten minutes by one of a solution of chloride of sodium of the strength of seven per cent. and is followed by a third lavage with the same solution.

SURGICAL TREATMENT OF LOCAL AND OF GENERAL PERITONITIS ORIGINATING FROM THE APPENDIX VERMIFORMIS.

The subject of peritonitis, as caused by inflammation, and particularly by perforation of the vermiform appendix, is exhaustively considered by **DR. A.**

KRECKE (*Deutsch. Zeitschrift für Chirurgie*, Bd. 30, April 10, 1890). He states that the variety of appendix disease which leads to peritonitis is the perforative. This perforation arises from ulceration beginning in the mucous membrane, which traverses the whole thickness of the intestinal coats and finally causes sloughing of the serosa. This ulcerative process is nearly always caused by the formation of concretions in the lumen of the appendix; rarely foreign bodies act in the same way. Where no cause for ulceration is found it is readily conceivable that a concretion might have been present, this having been washed away with the exudate.

It is well recognized that these perforations give rise to markedly different symptoms in accordance with whether they develop suddenly or are of more gradual formation. If the process is slow the peritoneal surfaces surrounding the inflamed area have time to form adhesions, so that when the opening into the bowel is finally accomplished, simply a circumscribed inflammation of the peritoneum results. When, however, there is a sudden perforation the contents of the appendix are freely distributed in the general peritoneal cavity, and as a result general peritonitis sets up.

It is to be noted that perforative peritonitis dependent upon disease of the appendix occurs, almost without exception, in individuals who were, up to the time of their attack, in good health and in full possession of their bodily strength. It is self-evident that such an individual is far more able to endure, not only the exhaustive effect of the disease, but also the shock of an operation, than is one who has passed through a long period of exhausting disease. The outlook for success after operation is in the former most favorable.

A further noteworthy peculiarity in appendix peritonitis is dependent upon the anatomical relations of this portion of the intestines. For instance, if there is a perforation in any part of the small intestine, the free motion of this portion of the alimentary tract causes wide distribution of the intestinal contents, so that the infection of the peritoneum becomes at once general. The appendix, however, is far less movable than the small intestine or even the stomach itself; therefore, its contents, even if discharged, will be found only in the portion of peritoneum immediately circumjacent. It can also be readily seen that a much smaller quantity of septic matter can escape from an opening in the appendix than where the bowel itself is wounded.

Clinical facts strongly confirm the truth of these propositions, since in no portion of the abdominal cavity is local peritonitis more common than in the right iliac region.

In considering the inflammation of the peritoneum under discussion, a knowledge of the two forms described by Mikulicz is of great importance. Mikulicz states that upon perforation of the bowel, either the whole peritoneal cavity is at once infected, or the peritoneum lying immediately about the perforation is alone involved. The first form of general inflammation he calls diffuse septic peritonitis. This is characterized by a virulent course. The second form he names progressive fibrino-purulent peritonitis; in this the suppurative process slowly extends, the new masses of pus becoming successively encapsulated. From an operative standpoint, a distinction between these two different forms of peritonitis is of cardinal importance, since in the first an extensive opening of the belly, with elaborate disinfection and drainage, is indicated; while in the second every precaution must be taken not to disturb the adhesions which protect the general peritoneal cavity from the local process.

Another most important point in the consideration of appendix peritonitis, is the fact that the diagnosis is usually made with great ease. Together with the general symptoms of peritonitis there is usually a history of pain beginning in the right iliac fossa. If the patient is a child, this is an additional reason for suspecting appendicitis, since the age of childhood is most prone to this form of perforative peritonitis.

From the foregoing points it will be seen that this form of peritonitis gives promise of far better results than can be hoped for from inflammation dependent upon perforations of other portions of the alimentary canal.

On first sight, it would seem that a careful review of the published cases might give us statistical results which would definitely determine the value of operation in these cases. Such a study can, however be of little service, unless cases are reported with far more care than has hitherto been observed; for in making comparisons, not only must the form of peritonitis be clearly indicated, but the stage in which operative procedure was undertaken, since in the beginning of an attack the prognosis is far better than where the knife is used only as a last resort. Krecke records two operative cases ending successfully, one of general, the other of local peritonitis, and each dependent upon perforation of the appendix. He notes that the diagnosis was in each case easy, depending in the main upon the seat of pain and tenderness at the beginning of the attack, and being further corroborated by the fact that both patients were children.

Especial attention was paid, before operation, to determining whether or not there was free gas in the peritoneal cavity. The liver dulness was in one case completely abolished; nevertheless, on laparotomy, the presence of gas was not confirmed. This is a further proof of the fact that liver dulness can be made to disappear by meteorism. According to Leube, escape of gas can only be diagnosed when, on placing the patient upon his left side, tympanitic resonance is found occupying the normal area of liver dulness in the axillary line.

The distinction between a diffuse septic peritonitis in one case, and a progressive fibro-purulent form in the other, was comparatively easy, since one exhibited in twenty hours the most violent symptoms of a general purulent peritonitis, while the other, after two days, showed symptoms of very moderate severity. In both cases the therapeutic indications were plain; excision of the diseased vermiform appendix offered the only hope of cure. In the case characterized by a diffuse peritonitis this was accomplished, but in place of suturing the opening into the bowel left after excision, the latter was simply ligated, as it was believed that recovery was impossible, and every means was used to hasten the completion of the operation lest death should take place on the table. When, however, the child improved, the parts were inspected with the object of replacing this ligature by a careful suture; adhesions seemed to have successfully accomplished the closing of the bowel end; these subsequently broke down, and a secondary operation was required for the closing of the opening in the vermiform appendix. In the second case great care was taken not to break up any of the limiting adhesions.

In regard to the after-treatment of perforative peritonitis dependent upon appendicitis, there is a general agreement that drainage should always be employed. This seems best accomplished by means of iodoform gauze, due precautions against poisoning by a too free use of this antiseptic being taken. In most cases the iodoform tamponade can be removed in a few days, when the wound can be closed.

The treatment of perforation of the appendix followed by peritonitis is operative, and no other measures should be for an instant considered; where the knife is used promptly even the most hopeless cases may recover.

It has been claimed that the purely local form of peritonitis resulting from ulcerations which are slow in their extension is amenable to medical treatment, and that the results of such treatment are far better than can be promised by the use of the knife. It will practically be admitted that appendicitis is identical with a circumscribed peritonitis. The question of operating upon these cases will depend more or less upon the presence or absence of pus. The question as to whether in every case of perityphlitis a collection of pus can be diagnosed, is one of prime importance. The testimony of various authors differs in regard to this point. Krafft found that every one of 106 cases of perityphlitis were accompanied by pus. Holländer believes that of 80 cases which were treated and cured pus was present in all. Leyden, however, claims that an exudate only is present in the early stages of perityphlitis, and that the treatment should be designed for the purpose of preventing the occurrence of suppuration. Krecke believes that in all these cases there is abscess formation, though he admits that possibly there may be exceptions. If perforation occurs, suppuration invariably follows. There are cases in which the ulcerating process does not extend to the serosa, and simply causes a more or less extensive adhesion of peritoneal surfaces. Even in these cases excision of the vermiform appendix is imperatively demanded, since thus the danger of later perforation is avoided. Holländer states that of his 80 cases treated medically not a single one terminated fatally. Though surgery can as yet show no such results, it must be admitted that these statistics are exceptional. Moreover, the subsequent histories of these cases would have a most important bearing, since recidivity is very frequent. Cases have been described in which it seems evident that absorption of abscesses has taken place, yet certainly this is quite exceptional.

Leyden and Israel have given a valuable rule for determining when pus formation is taking place. According to them, if after amelioration of the typical symptoms of perityphlitis the temperature again rises, the pulse becomes more frequent, symptoms of peritoneal irritation appear, and the general condition of the patient becomes worse, the diagnosis of pus formation can be made with great certainty. Under these circumstances exploratory puncture has been advised; this, however, is not to be recommended, since it is attended with danger to adjacent parts, and since, even though it fail to show signs of pus, there can be no surety that the latter is not present. Exploratory incision is greatly to be preferred. After reaching the peritoneum the condition of the parts below can be palpated through this membrane, and, if a collection of pus is found, an incision can be made directly into it. If, however, no abscess is found, Sonnenburg's method of tamponing the wound and making another examination after one or two days, can be followed. By this means it has happened that an abscess which could not be found has later been spontaneously evacuated through the exploratory abdominal wound.

In regard to the position of the parietal incision no binding rule can be established, since the appendix is movable. Generally a curved incision, such as that made for the ligation of the iliac artery, will be found most satisfactory. This will enable the surgeon to make a retro-peritoneal examination, as well as to reach the seat of trouble directly. If the peritoneum is wounded in the course of the operation, this wound should be closed at once by suture, and need cause no anxiety. In general it will be found better not to open the peritoneum immediately, and to protect carefully the loops of small intestine when the incision is finally made.

Since Toft has found that one out of every three men suffers from disease of the appendix, Krecke holds that excision of this process at birth, as a routine practice, is not so absurd as it would at first seem.

NEPHRORRHAPHY.

The treatment of movable kidney by suture is very carefully considered by DR. W. W. KEEN (*Boston Med. and Surg. Journ.*, June 5, 1890). The author distinguishes between movable and floating kidney. The former lies posterior to the peritoneum, while the latter has a mesonephron and lies within the peritoneal cavity. A clinical distinction between the two is impossible, since one may be quite as movable as the other.

The fact that movable kidney is generally overlooked is evidenced by the statement that of 1032 autopsies upon women 32 instances of this condition were found, while in 392 autopsies upon men it occurred 3 times. Oser calculates that 10 per cent. of mothers have this affection. It is more frequent in women than in men in the proportion of seven to one, and is more than ten times as frequent in the right side as in the left. Floating kidney is, of course, always congenital. The cause of movable kidney is commonly a fall, blow, or other traumatism. At times it originates from either frequent pregnancy or loss of fat. The diagnosis is generally clear: a movable tumor in the flank of the size and shape of the kidney, which can be pushed back into the loin, and displaced to or beyond the middle line, is indicative of the condition. Percussion of the loin assists, but it is less reliable than resistance to bimanual examination. Sometimes the hilum and the pulsating renal artery can be felt. The urine is generally normal, though it may contain albumin.

The discomforts incident to movable kidney are many and decided: Bearing-down or dragging pains in the loins, gastric disturbance, fetid breath, vomiting, and at times marked cardiac symptoms, all have been frequently noted. Besides discomfort there is serious danger to life if the affection is not remedied. Both hydro-nephrosis and abscess have resulted from movable kidney.

In treating these cases a pad and bandage should always be tried first. If this is unsuccessful nephrorrhaphy should be the next resort of the surgeon, since nephrectomy is attended by a high mortality. Four methods of fixation have been recommended:

1. By passing sutures through the fatty envelope of the kidney. This method is regarded as insufficient.

2. By stitching through the fibrinous capsule.

3. By passing the stitches through the parenchyma of the kidney. Only occasionally has any blood been found in the urine.

4. By splitting and stripping back the capsule to obtain cicatricial union between the raw kidney substance and the surrounding tissues. The stitches are passed through the parenchyma where it is still covered by the fibrous capsule. Only four cases have been operated upon by this method—a number as yet insufficient to form a judgment as to its merits.

The third method has given the author very good results. The kidney seems to tolerate the presence of sutures for a long time without trouble. Both extremities of the kidney should be secured by these stitches with four additional threads, two passing through the anterior and two through the posterior lips of the wound, respectively, and penetrating the kidney substance. Fine silk is used as suture material, and the stitches should be left in place. The external wound should not be sutured, as it closes quickly.

In the after-treatment the patient must be kept in bed for not less than one month, and when she is allowed to rise should wear a snug-fitting elastic bandage.

The paper is accompanied by a table of all the recorded cases—128 in number. Four deaths occurred, one not due to operation but to ileus; a second was fatal from inflammation of the pleura due to stitching the kidney to the twelfth rib; in the third death was caused by passing the stitches through an old infarct, resulting in septicæmia; and the fourth from later suppuration, probably the result of operation.

The author has performed four cases all apparently successful, though sufficient time has not yet elapsed to determine what the ultimate results may be in regard to permanent relief.

THE TREATMENT OF VESICAL CALCULUS IN MALE CHILDREN.

In considering the treatment of vesical calculus in male children DR. J. WILLIAM WHITE (*Medical News*, May 17, 1890) shows that the most powerful argument against the modern operation of litholapaxy, that is, the liability to recurrence, obtains mainly in the aged or in those suffering from marked pathological conditions of the bladder or prostate. In children the bladder is usually healthy and the prostate undeveloped. The urethra is proportionately as capacious as is the case in the adult, and will generally admit, after meatotomy, a No. 16 (French) lithotrite. Among other objections to lithotomy may be urged the fact that there are reported cases of emasculation following the perineal cut, and that statistics show a greater mortality than obtains in the crushing operation. The author believes the following conclusions in regard to the choice of operation in male children justifiable:

1. In every case of calculus in male children[1] litholapaxy, on account of ease of performance, low mortality, speedy recovery, and absence of danger of emasculation, should be the operation of predilection, division of the

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[1] These remarks apply almost as well to adults.

meatus being freely resorted to if that portion of the urethra offers an obstacle to the introduction of instruments.

2. The lithotrite and evacuating-tube should be of a size which can be inserted into the bladder without much effort or over-distention, and great gentleness should be observed in passing these instruments.

3. They should be withdrawn and reintroduced as seldom as possible, the stone being finely pulverized before the lithotrite is taken out at all. In seeking for or attempting to seize the stone, care should be taken to avoid such wide separation of the blades as will bring the male-blade in frequent contact with the vesical neck. The crushing should invariably be done only after rotating the blades into the centre of the bladder. Every particle of the calculous dust should be evacuated.

4. Rest in bed, milk diet, and sterilization of the urine by boric acid or salol given internally both before and after the operation are valuable adjuvants. During the operation every antiseptic precaution should be observed.

5. The exceptional cases of calculi which are both large and hard may be best treated by suprapubic lithotomy, but neither unusual size nor a moderate degree of density should of itself alone be thought positively to contraindicate litholapaxy.

6. Perineal lithotomy has now a very limited field, and should be employed chiefly in those cases of stones thought to be of small or medium size in which no lithotrite, however small, can be introduced with safety.

A METHOD OF APPLYING ANTISEPSIS IN THE TREATMENT OF RECENT ANTERIOR URETHRITIS.

DR. J. WILLIAM WHITE (*Medical News*, June 14, 1890) in a clinical paper upon the treatment of recent gonorrhœa by antiseptic agents, gives the result of his experience in this class of cases. He states that the evidence as to the causative *rôle* of the gonococcus in the development of gonorrhœa is daily becoming more conclusive, but that this theory is not necessary as a rationale for the antiseptic treatment of gonorrhœa, since the successful treatment of suppuration anywhere demands the employment of antiseptic agents. He points out the difficulty in the sterilization of the mucous surfaces of the urethra, and classes the topical remedies commonly employed as follows:

(1) Those which, when strong enough to exert a sufficient germicidal action, are locally so irritating as to be harmful or unbearable. This class includes nitrate of silver, carbolic acid, chloride of zinc, iodine, chloral, potassium permanganate, salicylic acid, and creasote, all of which have been faithfully tried in many cases and by competent surgeons. The concurrent testimony is, that when used in sufficient strength to sterilize the discharges, they produce an amount of local irritation and swelling, ardor urinæ, chordee, and even, exceptionally, urethral ulceration, that far outweighs any advantage to be derived from their antiseptic properties.

(2) Those which are such feeble antiseptic agents that they cannot be depended upon to destroy all the bacteria found in urethral discharges. Among these may be mentioned resorcin, thallin, quinine, the sulphate and acetate of zinc, lanolin, sulphur waters, tannin, alum, hydronaphthol, and cadmium sulphate. The clinical and experimental evidence coincide as to

most of these drugs; each has its more or less enthusiastic advocates, but when given a wider trial has been found disappointing, while bacteriologists have shown that the germicidal action was either limited to a very few varieties of bacteria, or was slow and uncertain.

(3) The third class includes a number of agents which are open to the same objection of too feeble or too limited antiseptic action, and have the additional drawback of insolubility in ordinary media and of occasionally becoming mechanically irritating from the formation of concretions. Among these are iodoform, calomel, bismuth subnitrate, oxide of zinc, and other insoluble powders.

Dr. White states that in the above list are omitted the five drugs which, in various combinations, are of the most practical value in attempting by topical treatment to secure asepsis in the inflamed urethra. These are: Corrosive sublimate, sulpho-carbolate of zinc, boric acid, peroxide of hydrogen, and the salicylate of bismuth.

The method of deep irrigation or retro-injection he finds unsatisfactory, but orders instead frequent injections from a large syringe with moderate force, using the strongest solutions that can be given without causing pain, and preventing the fluid from passing too deeply by instructing the patient to sit upon a folded towel during injection so as to occlude the membranous urethra. His results were not materially improved until a solution of sulphocarbolate of zinc (ten grains to the ounce of the mixture) in a ten to fifteen per cent. lotion of peroxide of hydrogen was added. This provided a formula which, both clinically and experimentally, showed excellent antiseptic properties. The best results were attained when, in addition to this treatment, or often entirely omitting local treatment, six to eight capsules a day were given by the mouth, each containing—

Salol	3½ grains.
Oleoresin of cubebs	5 "
Para balsam of copaiba	10 "
Pepsin	1 grain

Of fifty-three cases of recent urethritis thus treated, and of all grades of severity, a distinct and unmistakable effect was produced upon the discharge in every instance but two, in which a violent indigestion prevented a thorough trial of the capsules. In about two-thirds of the whole number the discharge almost or entirely disappeared during the first week after treatment was begun. In but one case of the whole number did gonorrhœal rheumatism develop. This was especially noteworthy in three cases which had never before been free from joint trouble during an attack of gonorrhœa.

The author's conclusions upon this subject are as follows:

1. The microscopical and experimental evidence in favor of the bacterial origin of gonorrhœa is confirmed by clinical and therapeutical experience.

2. The results of antiseptic treatment have not been so uniformly successful as would be expected, on account of—*a*, the anatomical and physiological peculiarities of the male urethra; *b*, the difficulty of applying sufficiently energetic local antisepsis; *c*, the necessarily intermittent character of such applications, and *d*, the failure to combine with the topical treatment appropriate internal medication.

3. No one antiseptic agent can be depended upon, in the strength at which it can be borne by the inflamed urethral mucous membrane, completely to sterilize the discharges and the suppurating surfaces. A judicious combination of several antiseptics, if not essential to success, is at least of considerable value.

4. The internal administration of salol in conjunction with copaiba and cubebs renders the urine aseptic and probably antiseptic, so that it acts as an exceptionally thorough and efficient antiseptic injection, shortening the duration of the disease and diminishing the frequency and severity of the complications.

5. The production of urinary asepsis by internal medication is of considerble value not only in the inflammatory affections of the genito-urinary tract, but in the preparation of the patient for operation upon those organs and in the after-treatment.

OTOLOGY.

UNDER THE CHARGE OF

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Ear Disease in Influenza.

Professors Gruber and **Politzer**, of Vienna, gave a short synopsis of their experience in ear affections during the recent epidemic of influenza, at a meeting of K. K. Gesellschaft der Aerzte, February 28, 1890 (*Präger med. Wochenschrift*, March 12, 1890). Professor Gruber stated that in the third week in December, 1889, numerous cases of middle-ear disease, of a purulent nature, presented themselves, both in the clinic and in private. These were of a severe type, and resembled the form usually found in connection with an infectious disease like scarlatina or pneumonia. Statistics for December, 1888, and January, 1889, showed that ninety-one cases of otitis media catarrhalis, and ninety-five cases of otitis media purulenta presented themselves to his attention, while in the same period of 1889 and 1890, *two hundred and fifty-three* cases of otitis media catarrhalis, and *two hundred and eighty-nine* of otitis media purulenta came under his notice. These cases were of the most intense form and ambilateral, which is unusual in purulent processes. The process was characterized by extraordinary hyperæmia, which extended to the neighboring osseous and soft tissues. The membrana tympani was more frequently than usual implicated from the beginning, and soon showed extravasation of blood in its tissue, and ecchymoses also appeared on the wall of the auditory canal near the membrana tympani. The discharge from the drum-cavity was also more or less hemorrhagic at first, but subsequently become copiously purulent. In six instances artificial perforation of the mastoid became necessary. The mastoid cells were found filled with pus,